Appendix A

Responsiveness Summary

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APPENDIX A

RESPONSIVENESS SUMMARY

A Summary of Comments Received

During the Public Comment Period

A-1. OVERVIEW

Operable Unit (OU) 9-04 is within Waste Area Group (WAG) 9 at the Argonne National Laboratory - West (ANL-W) at the Idaho National Engineering and Environmental Laboratory (INEEL). WAG 9 contains 37 identified release sites contained within four operable units. DOE added 2 sites from WAG 10 to the 37 release sites evaluated in the OU 9-04 Comprehensive RI/FS. Eight subareas from five of these 39 sites were determined to have contamination that posed a potential risk to human health and the environment. For those sites that will require remedial action to reduce or eliminate those risks, the remedial action alternatives were evaluated and a preferred alternative was selected. In addition to the eight areas of concern at OU 9-04, there were 33 areas that were determined to pose no unacceptable risk to human health or the environment and were identified by the agencies as requiring No Action. A Proposed Plan that summarized the results of the RI/FS and presented the preferred remedial alternative and the contingent alternative was released by the agencies for public review on January 8, 1998. Public comment on this document started on January 12, 1998, and was extended until March 12, 1998 due to a request from the public. Public meetings were held in Boise, Moscow, and Idaho Falls, Idaho, on January 20, 21, and 22, 1998, respectively.

This Responsiveness Summary responds to both written and verbal comments received during the public comment period and meetings. Generally, support for the preferred alternative was favorable with some commentors expressing concern over mobility of contaminants and the introduction of non-native plant species to remove the contaminants from soils.

A-2. BACKGROUND ON COMMUNITY INVOLVEMENT

In accordance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 113(k)(2)(B)(I-v) and 117, a series of opportunities were made available for public information and participation in the remedial investigation and decision process for OU 9-04, WAG 9 of the ANL-W from 1991 to the present. Public outreach activities included distribution of fact sheets that briefly discussed the status of investigations to date, *INEEL Reporter* articles and updates, a Proposed Plan, and focus group interactions, including tele-conference calls, briefings, presentations, and public meetings.

On January 8, 1998, the U.S. Department of Energy, (DOE) issued a news release to more than 100 media contacts concerning the beginning of a 30-day public comment period pertaining to the WAG 9 ANL-W Proposed Plan, which began January 12, 1998, and was extended to March 12, 1998. In addition, an *INEEL Reporter* article was sent to approximately 6,700 people on the INEEL Community Relations Plan mailing list and mentioned the public meeting schedule. Both the news release and *INEEL Reporter* gave notice to the public that WAG 9 ANL-W investigation documents would be available before the beginning of the comment period in the Administrative Record section of the INEEL Information Repositories located in the INEEL Technical Library, the INEEL Boise Office, and public

libraries in Fort Hall, Pocatello, and Moscow, Idaho. Following the announcement of the public comment period, 6,700 copies of the Proposed Plan were mailed to the public for their review and comment. In addition, public meetings were held at Boise, Moscow, and Idaho Falls, Idaho, on January 20, 21, and 22, 1998, respectively. Written comment forms were available at the meetings, and a court recorder was present at each meeting to record transcripts of discussions and public comments. A total of about 75 people not associated with the project attended the public meetings. Overall, 9 citizens provided formal comments; of these, 1 citizen provided verbal comments and eight provided written comments. Comments were also received from the INEEL Citizens Advisory Board and are included in this responsiveness summary.

This Responsiveness Summary has been prepared as a part of the Record of Decision (ROD). All formal verbal comments, as given at the public meetings, and all written comments, as submitted, are included in the Administrative Record for the ROD. Table A-1 is provided as a reference and lists the commentors in alphabetical order, identifies the comment and response number, and identifies the page the comment and response can be found. The ROD presents the selected alternative and contingent alternative for the eight areas in OU 9-04 that are of concern and recommends No Action for the remaining 33 areas. The selected alternative was chosen in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (the National Contingency Plan). In addition, the selected alternative fully complies with CERCLA §121 statutory preference for treatment of contaminants for as a permanent solution. The decisions presented in the ROD are based on information contained in the Administrative Record.

A-3. LISTING OF COMMENTERS, COMMENT NUMBERS, AND PAGE NUMBERS

All of the formal comments submitted by the public in either written or verbal form were tabulated and assigned a comment number. Where applicable the commentors are listed alphabetically in the first column, the comment number appears in the second column, and the page the comment and response can be found on is shown in the third column.

NAME	AFFILIATION	COMMENT #	APPENDIX A PAGE #
CAB	Citizen Advisory Board	40	17
CAB	Citizen Advisory Board	41	17
CAB	Citizen Advisory Board	42	18
CAB	Citizen Advisory Board	43	18
CAB	Citizen Advisory Board	44	18
CAB	Citizen Advisory Board	45	19
Beatrice Brailsford	Snake River Alliance	57	22
Beatrice Brailsford	Snake River Alliance	58	22

NAME	AFFILIATION	COMMENT #	APPENDIX A PAGE #
Beatrice Brailsford	Snake River Alliance	59	22
Beatrice Brailsford	Snake River Alliance	60	23
Beatrice Brailsford	Snake River Alliance	61	23
Beatrice Brailsford	Snake River Alliance	62	23
Beatrice Brailsford	Snake River Alliance	63	23
Beatrice Brailsford	Snake River Alliance	64	24
Beatrice Brailsford	Snake River Alliance	65	24
Beatrice Brailsford	Snake River Alliance	66	24
Chuck Broscious	Environmental Defense Institute	4	6
Chuck Broscious	Environmental Defense Institute	5	7
Chuck Broscious	Environmental Defense Institute	6	7
Chuck Broscious	Environmental Defense Institute	7	8
Chuck Broscious	Environmental Defense Institute	8	8
Chuck Broscious	Environmental Defense Institute	9	10
Chuck Broscious	Environmental Defense Institute	10	10
Chuck Broscious	Environmental Defense Institute	11	10
Chuck Broscious	Environmental Defense Institute	12	10
Chuck Broscious	Environmental Defense Institute	13	10
Chuck Broscious	Environmental Defense Institute	14	11
Chuck Broscious	Environmental Defense Institute	15	11
Chuck Broscious	Environmental Defense Institute	16	11
Chuck Broscious	Environmental Defense Institute	17	12
Chuck Broscious	Environmental Defense Institute	18	12
Chuck Broscious	Environmental Defense Institute	47	5
Dennis Donnelly	Concerned Citizen	19	12
Dennis Donnelly	Concerned Citizen	20	12
Dennis Donnelly	Concerned Citizen	21	12
Dennis Donnelly	Concerned Citizen	22	13

NAME	AFFILIATION	COMMENT #	APPENDIX A PAGE #
Dennis Donnelly	Concerned Citizen	23	13
Dennis Donnelly	Concerned Citizen	24	13
Dennis Donnelly	Concerned Citizen	25	14
Walt Hampson	Concerned Citizen	27	14
Walt Hampson	Concerned Citizen	28	14
Walt Hampson	Concerned Citizen	29	14
Walt Hampson	Concerned Citizen	30	15
Walt Hampson	Concerned Citizen	31	15
Martin Huebner	Coalition 21	34	16
Martin Huebner	Coalition 21	35	16
Martin Huebner	Coalition 21	36	16
Darwin Jeppesen	Concerned Citizen	37	16
Darwin Jeppesen	Concerned Citizen	38	16
Darwin Jeppesen	Concerned Citizen	39	17
KayLin Loveland	Envirocare of Utah Inc.	48	19
KayLin Loveland	Envirocare of Utah Inc.	49	20
KayLin Loveland	Envirocare of Utah Inc.	50	20
KayLin Loveland	Envirocare of Utah Inc.	51	21
KayLin Loveland	Envirocare of Utah Inc.	52	21
KayLin Loveland	Envirocare of Utah Inc.	53	21
KayLin Loveland	Envirocare of Utah Inc.	54	21
KayLin Loveland	Envirocare of Utah Inc.	55	22
KayLin Loveland	Envirocare of Utah Inc.	56	22
Swen Magnuson #1	Concerned Citizen	1	5
Swen Magnuson #1	Concerned Citizen	2	6
Swen Magnuson #1	Concerned Citizen	3	6
Swen Magnuson #2	Concerned Citizen	26	14
Unknown #1	Unknown	32	15

NAME	AFFILIATION	COMMENT #	APPENDIX A PAGE #
Unknown #1	Unknown	33	15
Unknown #2	Unknown	46	19

A-4. SUMMARY OF COMMENTS WITH RESPONSES

Comments and questions raised during the public comment period on the Proposed Plan for the WAG 9, OU 9-04 Comprehensive RI/FS for ANL-W are summarized below. The public meetings were divided into a brief presentation, an informal question-and-answer session, and a formal public comment session. The meeting format was described in published announcements, and meeting attendees were reminded of the format at the beginning of the meeting. The informal question-and-answer session was designed to provide immediate responses to the public's questions and concerns. Several questions were answered during the informal period of the public meetings on the Proposed Plan. This Responsiveness Summary does not attempt to summarize or respond to issues and concerns raised during the informal part of the public meetings. However, the Administrative Record contains complete transcripts of these meetings, which include the agencies' responses to these informal questions.

Comments received during the formal comment session of the meetings are addressed by the agencies in this Responsiveness Summary. The public was requested to provide their comments in writing, verbally during the public meetings, or by recording a message using INEEL's toll-free number.

Comment 1 I am concerned that DOE-ID appears to be using the engineered barrier or rock cover that was emplaced at the SL1 burial grounds and at the BORAX facility as the prototype barrier for any subsequent proposed disposal facilities on the INEEL. This SL1-style rock cover or "barrier" is part of the containment alternative presented in the proposed plans for both WAG 8 and WAG 9. It is well documented that the effect of this rock cover would be to increase infiltration and minimize evaporation thereby increasing the amount of water available to leach contaminants from the disposed soil the cover is supposed to protect. I have read the proposed plan for WAG 8 and pertinent portions of the WAG 8 Comprehensive RI/FS and see no acknowledgment that this rock cover will increase infiltration. The fact that this rock cover will increase infiltration and leaching should be plainly stated in the proposed plan for the information of members of the public. If anything, the wrong impression is given in the Overall Protection of Human Health and the Environment section of the proposed plan for WAG 8 (page 16) where it is stated that Alternative 3 will "minimize infiltration". This last statement is miserably incorrect and needs to be changed.

Response If the "engineered cover" had been selected as the remedial alternative, it would have been designed to limit the infiltration of water over the containment area with the use of multiple layers of different materials. The "engineered cover" depicted in the WAG 9 Proposed Plan was only a sketch giving an idea of the relationship between the contaminated soil and a generic multi layer rock cover. The "engineered cover" is not the selected alternative nor is it the contingent alternative for WAG 9 because other alternatives offered greater benefit at reduced cost. Because of the nature and location of

the radiologically contaminated soils at the Naval Reactors Facility (WAG 8), the engineered cover has been selected as the preferred alternative for WAG 8. WAG 8 engineers are currently evaluating the use and effectiveness of various media that could be potentially used in their multilayered engineered cover.

Comment 2 While the groundwater pathway may not have been a risk in the baseline risk assessment for either WAGs 8 or 9, even with infiltration rates as high as 1 m/yr, it still seems wrong from an environmental stewardship viewpoint to needlessly install a rock cover that will undoubtedly increase leaching from the contaminated soil and increase concentrations of leached contaminants in the Snake River Plain aquifer. I feel this statement is true even if the increased infiltration caused by the rock cover only incrementally increases contaminant concentration in the aquifer because there are better cover alternatives. True engineered barriers that provide the necessary shielding and biotic protection have been designed and are being tested on the INEEL. These barriers are resistant to erosion and minimize infiltration. These barrier designs should be given a thorough comparative evaluation to an SLI-style barrier for use in the selected alternative. This comparison should include analysis of even incremental risk increases in the groundwater pathway from increased infiltration due to the rock cover. Hopefully, this comparison will occur since there are words in the Comprehensive RI/FS for WAG 8 that the proposed rock cover in Alternative 3b is a "conceptual design" and that the final design will be developed during the remedial design process.

Response The "engineered cover" as depicted on page 15 of the WAG 9 proposed plan is only a conceptual figure. If an engineered barrier were selected as the remedy, it would be disgned to reduce infiltration, resist erosion, and prevent biotic intrusion. Decisions as to the use of an impermeable layer will be made during the remedial design phase of this CERCLA process.

Comment 3 The WAG 8 Comprehensive RI/FS cites Reith and Caldwell (1990) as stating the proposed barrier is appropriate for containment in an arid area. I have read the article by Reith and Caldwell, and, although the article admits that several of these rock covers have been built at UMTRA sites, the main point presented in the article is that since vegetated soil covers are more effective for reducing infiltration and subsequent leaching from contaminated soils rather than simple rock covers. This gives the appearance that the Reith and Caldwell article is incorrectly cited out of context for purposes of justifying the choice of engineered barriers.

Response Vegetated soil covers were not selected because some plants indigenous to the INEEL have very deep tap roots that could penetrate the soil cover. This could lead to inadvertent uptake by these plants and possible exposure to other ecological receptors. The "native soil cover" is not the preferred alternative nor is it the contingent alternative for WAG 9 because other alternatives offered benefit gains at reduced costs.

Comment 4 This must not be called a "comprehensive" plan because it does not include ANL-W's underground high-level waste site (Radioactive Scrap and Waste Facility) which as of

1981 has 81 cubic meters of waste containing 9,823,000 curies of radioactive materials including 40.73 grams of plutonium [ID-100.54-81@19] DOE must not continue to postpone treatment and disposition of this waste.

Response The OU 9-04 comprehensive RI/FS included an evaluation of all active, operating facilities which are co-located near the 37 WAG 9 inactive waste sites that are being investigated under CERCLA. Any release sites discovered in the future will be evaluated as new sites for remediation under the provisions of the FFA/CO. The Radioactive Scrap and Waste Facility (RSWF), is one such facility. The RSWF is a dry-type spent nuclear fuel and radioactive waste storage facility. The spent fuel and waste is stored in double lined steel containers that are inserted into cathodically protected steel cylinders which are set vertically into the ground. All RSWF spent fuel and waste is retrievable and DOE plans to treat these materials prior to disposal in an appropriate off-site disposal facility. The RSWF is currently operating under a Resource Conservation and Recovery Act (RCRA) storage permit for hazardous and radioactive mixed wastes. Closure of the RSWF will be governed by RCRA closure requirements.

Comment 5 ANL-W intends to continue to use the contaminated Industrial Waste Pond (ANL-01) and the sewage Lagoons (ANL-04) and the State and EPA regulators are silent. Continued waste water discharge perpetuates the leaching of contaminates into the soil column and eventually to the aquifer below.

Response The fate of all contaminants at WAG 9 inactive waste sites have been modeled using a very conservative modeling program (GWSCREEN). This program takes into account the soil types, depth to the aquifer (630 ft), and continued water discharges to these sites. The results of this conservative modeling show that continued use of the Industrial Waste Pond and Sewage Lagoons does not pose an unacceptable risk to human health or the environment. Core samples collected in drainage ditches as well as the Industrial Waste Pond verify that the contaminants have not migrated greater than 3.5 feet below the surface after 37 years of operation. The planned continued use of these facilities for approximately the next 5 and 35 years, respectively, is also not likely to drive these contaminants down to the aquifer at levels that pose unacceptable risk to human health and the environment. The contaminants will be remediated down to the cleanup goals after the useful life of the Industrial Waste Pond and Sewage Lagoons, approximately 5 and 35 years, respectively.

Comment 6 The Plan acknowledges that: "Human health risks from cesium-137 will be at acceptable levels within 130 years due to radiological decay." [Plan@14] Yet in the next paragraph, the plan states: "Institutional controls are assumed to remain in effect for at least 100 years." What about the next 30 years. Once the CERCLA process is wound up in a few years, there are uncertainties that DOE or any other federal agency is going to fulfill its questionably enforceable commitment to provide monitoring and institutional control to ensure no people gain access to the waste sites. Again, a trust fund is warranted and a requirement under the NRC 10 CRF ss 61.63 "Financial Assurances for Institutional Controls."

Response It is true that the cesium-137 contamination would radioactively decay to acceptable levels in 130 years if no action were taken at the WAG 9 site. The 100 years of institutional controls proposed in Alternative 3, is based on the most likely future use of the INEEL which is the continued control the land by DOE. . Alternative 3, includes an engineered cover that is designed to last longer than the 130 years necessary to limit the direct radiation exposure pathway to future residents.

Comment 7 ANL-W's Plan, like the NRF deficient Plan, is to consolidate all the contaminated soil into the Industrial Waste Pit, and again, it does not meet Applicable or Relevant and Appropriate Requirements (ARAR's). This lack of full disclosure by the polluter and the regulators is unacceptable. The drawing offered in the Plan [plan@15] of the Industrial Pit does not vaguely resemble the 20 foot deep localized depression that the pit is in. The Plan drawing shows a flat terrain with the leach pit being the only depression. This is a major discrepancy. Continued pooling of surrounding precipitation over the pit (covered or not) will provide water to leach contaminates towards the aquifer. Moreover, the cap does not include an impermeable seal to keep precipitation out. The Waste Pit currently receives drainage from a considerable area to the southeast in addition to storm water from the ANL-W site. A major flaw in the Plan is not providing drainage diversion away from the pit regardless of the alternative chosen. The fact that chromium, mercury, selenium, and zinc are in the pit sediments compels DOE to do Toxicity Characteristic Leaching Procedure (TCLP) to determine if it qualifies the waste as a mixed hazardous/radioactive waste and it must be then disposed pursuant to RCRA land disposal restrictions (40 CFR-148). DOE's preferred remedial alternative simply is not supported by essential information.

Response None of the alternatives evaluated for WAG 9 include consolidating contaminated soils in an Industrial Waste Pit. The containment alternative (Alternative 3) would consolidate the WAG 9 contaminated soils in an engineered landfill located at a well-drained location near ANL-W. If the contingent Alternative 4a (use of an INEEL Soils Repository, or RWMC) is selected, the soils would be consolidated several miles away from WAG 9 under an engineered cover that would prohibit the pooling of surface water or precipitation. The "engineered cover" as depicted on page 15 of the WAG 9 proposed plan is only a conceptual figure. Decisions as to the use of an impermeable layer will be made during the remedial design phase of this CERCLA process. Contaminant modeling has shown that continued use of the ANL-W Industrial Waste Pond as a drainage collection area does not pose an unacceptable risk to humans or the environment.

Samples have been collected and analyzed for total and TCLP analysis in the waste sites with the highest concentrations of arsenic, chromium, mercury and lead. All of these samples had concentrations less than the TCLP limits and therefore, do not have the potential to leach to groundwater at concentrations high enough to pose a risk. None of the WAG 9 soils have the potential to fail the TCLP test for selenium.

Comment 8 The plan states at page 8 that: "contaminantes to the groundwater show only arsenic and chromium exceeded the cleanup goal screening levels." The ANL-W RI/FS well (M-13)

1993 sample data shows strontium-90 at 1,330 pCi/L. [RI/FS, Vol III App.H pg.3]. EPA maximum concentration level for strontium-90 in drinking water is 8 pCi/L. Sampling in 1994-95 shows well M-12 contains organic chemicals hundreds of times over the MCL [RI/FS, Vol v]. The Plan does not acknowledge this strontium migration or propose remedies that will correct the problem. This contaminate migration exemplifies the disastrous impact of leach pits and why the ANL-W Industrial Pond must be immediately closed and appropriately cleaned up.

Response

The Proposed Plan actually states that "the modeling of contaminants to the groundwater shows that only arsenic and chromium exceeded the cleanup goal screening levels. Therefore, the maximum concentrations of the arsenic and chromium at 100 years in the future were used to determine the risks to human health." The cleanup goal screening levels provided a tool to screen contaminants from inclusion into the risk assessment because of the contaminants low concentrations and or mass.

The organic contaminant detected at well M-12 is bis(2-Ethylhexyl)phthalate and was detected numerous times in the sampling of the upgradient as well as the downgradient wells at WAG 9. This is a common laboratory contaminant and as such the EPA recognizes that samples can be qualified as un-detectable if the concentration is less then 10 times the concentration in the blank sample. The bis(2-Ethylhexyl)phthalate was screened as a contaminant of concern for the following reasons; (1) because the highest concentration of bis(2-Ethylhexyl)phthalate was detected in the upgradient well (M-12), (2) no data trends exist of increasing concentrations, and (3) EPA recognizes it is a common laboratory contaminant.

It is correct that strontium-90 had an estimated detection of 1,330 pCi/L from the ANL-W downgradient monitoring well M-13 for the sample collected October 25, 1995. However, the sample collected the same day for the upgradient monitoring well M-12 also had an estimated detection of strontium-90 of 1,320 pCi/L. The data from this October 25, 1995 sampling has been qualified as estimated (J) by the data validator because the laboratory control samples (LCS) were outside control limits. Because the data was flagged by the data validator, at thousands of times above the detection levels, DOE believes that laboratory error was the cause of these erroneously high values.

Also, data results collected on July 31, 1995 showed 0.7 and 0.1 pCi/L from M-12 and M-13, respectively. These well are located 4,928.83 feet apart with M-13 almost directly downgradient of M-12. The groundwater in the Snake River Plain Aquifer flows at most 10 feet per day and thus it would take 492 days for the water under M-12 to reach M-13. If this were the case the strontium-90 would have to have been detected in the upgradient M-12 well for over a year and this is not the case since the July 31, 1995 data shows both the M-12 and M-13 strontium-90 results at 0.7 and 0.1 pCi/L. In an effort to substantiate the strontium-90 detections in the M-12 and M-13 wells, two groundwater samples from each well were collected on December 14, 1995. The upgradient M-12 samples were both non-detects at 0.4 and 0.0 pCi/L, while the downgradient M-13 well had one non-detect at 0.5 and one detection at 1.6 pCi/L. Also, results of drinking water wells EBR-II # 1 and 2 have been analyzed semi-annually for gross beta with the results being lower than the MCL level of 8 pCi/L.

Comment 9 Alternative 5 (phytoremediation) that would use plants, over five growing seasons, to absorb the contaminants in the leach pit, is so ludicrous in an arid environment that it does not deserve rebuttal.

Response Phytoremediation is a technology that has proven successful at other DOE radiologically contaminated waste sites and has been selected as the preferred alternative to remediate soils in feight areas at ANL-W. Because WAG 9 is located in a semi-arid environment, the contaminant extracting plants would be irrigated as required to enhance plant growth. The EBR-II Leach Pit was remediated in 1993 and is not part of this proposed action.

Comment 10 There are issues of plant density to prevent wind erosion (contaminate dispersion).

Response Four of the eight areas where the Agencies propose using phytoremediation are ditch bottoms and ponds. Based on the physical nature of these depressed sites, they tend to accumulate windblown sediments. The one site (ANL-09-Mound) is on the banks of a large storm water Interceptor Canal and currently has only sparse vegetation growing. Any additional vegetation that is growing during the dry season will only help prevent against windblown contamination. The contaminant extracting plants would be densely planted to ensure effective root penetration into contaminated soils.

Comment 11 What is ANL going to do after annual harvest and between growing seasons to prevent wind erosion?

Response After each of the growing seasons are completed, DOE may continue to keep the area wetted until the ground freezes. This would prevent any windblown contamination problems. Other erosion control options may include use of a biodegradable soil tackifier that would be sprayed on after each harvest.

Comment 12 Bench scale tests in ANL's greenhouse will only reflect efficiencies in an artificial climate controlled environment, not the real desert thing.

Response Every effort is being taken during the greenhouse studies to simulate actual conditions at the INEEL. These include temperature control, humidity control, and sunlight duration.

Comment 13 The Sanitary Waste Lift Station (ANL-31) is listed as a no action site presumably because ANL wants to continue to use the pumps. The Plan offers no data to substantiate this no action decision.

Response As stated in the Operable Unit 9-04 Comprehensive RI/FS, the ANL-31 building consists of two lift stations in the same building. The South side contains a sanitary sewage waste lift station and will remain in service. The North side of ANL-31 contained the industrial lift station that was used to pump wastes to the EBR-II Leach Pit. This side of ANL-31 was remediated in 1995 when ANL-W collected samples, removed the sludge, collected verification samples and backfilled this half of the building with clean sand. Also, all of the associated piping and contaminated soil below the piping from the

industrial lift station to the EBR-II Leach Pit was removed and disposed of at RWMC in 1995 and 1996. In their current conditions, neither of the two lift stations in the ANL-31 site poses an unacceptable risk to human health or the environment.

Comment 14 The Track 2 Investigation shows maximum concentrations of sludge collected from the Lift Station as follows: cesium-137 at 9,380 pCi/g, strontium-90 at 2,470 pCi/g, uranium at 4.8 pCi/g, neptunium-237 at 13 pCi/g, and cobalt-60 at 16.3 pCi/g. [Vol. III track 2 App. -H pg4] This contamination suggests that this Lift Station was inappropriately excluded from the cleanup. May 1995 Track 2 reflect continued high gross alpha and gross beta in the pump water and sludge. [Vol. III Appendix - E]

Response The Track 2 investigation resulted in the removal action that is described in the response to comment 13. The lift station no longer poses an unacceptable risk to human health or the environment.

Comment 15 The EBR-II Leach Pit (ANL-08) underwent an interim "cleanup" action in 1993 when only "the majority of the sludge was removed" and the pit was backfilled. The Plan fails to acknowledge that the remaining sludge had the following pCi/g concentrations: cesium-137 at 29,110, iodine-129 at 124, neptunium-237 at 329, strontium-90 at 2,247, yttrium-90 at 2,247. [R1/FS Vol. II pg. 59-60] Inadequate interim actions end up being permanent because of the additional volume of contaminated soil used as backfill is now part of the problem.

Response Every effort was taken during the 1993 removal action to remove as much of the sludge as possible. These actions included pressure washing of the irregular basalt floor and collection of the material that was removed during the washing. The residual sludge remaining was estimated to be at most one-eighth of and inch thick. a worst case estimate of the sludge volume (using a one-eighth-inch thickness) was used in modeling the transport of contaminants to the aquifer. These values were used in the OU 9-04 Comprehensive RI/FS along with the modeling of contaminants that may have leached from the sludge in the years prior to the 1993 removal action. The modeling of past and future contaminant behavior shows that the EBR-II Leach Pit no longer poses an unacceptable risk to human health or the environment.

Comment 16 The public has demanded for many years that DOE treat its radioactive waste into a stable vitrified form so that it can be stored onsite until a safe permanent repository can be established.

Response Vitrification was evaluated as a potential alternative in Chapter 7 of the OU 9-04 Comprehensive RI/FS and screened out because of it is typically used for long lived radionuclide wastes. Contaminants at WAG 9 are short lived radionuclides and do not require isolation for 10,000 years. In addition the high cost of vitrification is not justifiable for use on the short lived radionuclide wastes and offer very little gained benefits over the selected and contingent remedies.

Comment 17 At the very legal minimum, all contaminated soil should be shipped off the INEEL site to a licensed and permitted RCRA hazardous/radioactive disposal site.

Response None of the wastes at the WAG 9 sites have failed the TCLP test for RCRA wastes. The off-INEEL disposal (Alternative 4b) was not selected because of the cost effectiveness. The preferred and contingent alternatives at ANL-W are protective of human health and the environment, and comply with Applicable and Relevant and Appropriate Requirements, including the requirements of the Resource Conservation and Recovery Act.

Comment 18 a compromise would be if there is an area on the INEEL site that is not over the Snake River Plain Aquifer, use it to build a licensed and permitted RCRA hazardous/radioactive disposal site for INEEL low-level wastes only.

Response None of the wastes at the WAG 9 sites have failed the TCLP test for RCRA wastes. The Agencies have proposed Alternative 5, phytoremediation as the preferred alternative. This alternative would treat the soils to remove the contaminants. The contaminants would then be recovered, stabilized, and disposed of in accordance with the Waste Acceptance Criteria of a licensed off-site disposal facility.

Comment 19 I feel the goal of your contamination cleanup should be the unrestricted future use of the land and water resources at the site.

Response The Agencies agree that the goal of the cleanup at WAG 9 should be the unrestricted future use of the land and water resources at ANL-W. By selecting Alternative 5, phytoremediation, as the preferred alternative to remediate the eight areas of WAG 9 that pose unacceptable risks to human health and the environment, the Agencies will be able to release the lands without any restriction after the remediation goals are met.

Comment 20 To attain unrestricted future use of the land and water resources at the site, I feel the plan should address the removal of spent fuel from all the reactors.

Response OU 9-04 Comprehensive RI/FS investigated the 37 inactive waste sites at ANL-W, and two inactive waste sites from WAG 10 near ANL-W that have had past releases to the environment, and active ANL-W facilities were reviewed for future releases. The active facilities are currently operating under stringent operating procedures and permits. When the operating facilities are shut-down they will be defueled and decontaminated and left in a radiologically and industrially safe condition. Four of five reactors at ANL-W have been shutdown and have been defueled. The remaining small neutron radiography reactor is still operating and will be defueled when DOE terminates its operation.

Comment 21 What about the sodium from the Experimental Breeder Reactor II, all of it— what will be its fate? The plan should remove of all the sodium coolant and materials contaminated with radioactive sodium. I feel the sodium is especially important due to

the environmental mobility of sodium and the location of this site over the aquifer that supplies most of the water for this region.

Response As part of the DOE's shutdown plan for the Experimental Breeder Reactor-II, the primary and secondary sodium coolant will be drained and chemically converted to non hazardous sodium carbonate. DOE has constructed a facility at ANL-W to convert all EBR-II sodium and sodium potassium alloy to sodium carbonate powder, a non-hazardous compound that has very low levels of radioactivity.

Comment 22 When I visited the Argonne-West site over fifteen years ago, I remember seeing, on the northeast side of the complex, a series of waste-holes that appeared to be vertical pipes with concrete lids that were said to contain intermediate-level radioactive wastes which were contaminated with sodium. I see no mention of these structures in your description of the site— Have they been removed?

Response The Radioactive Scrap and Waste Facility (RSWF), is a dry-type spent nuclear fuel and radioactive waste storage facility. The spent fuel and waste is stored in double lined steel containers that are inserted into cathodically protected steel cylinders which are set vertically into the ground. All RSWF spent fuel and waste is retrievable and DOE plans to treat these materials prior to disposal in an appropriate off-site disposal facility. The RSWF is currently operating under a Resource Conservation and Recovery Act (RCRA) storage permit for hazardous and radioactive mixed wastes. Closure of the RSWF will be governed by RCRA closure requirements.

Comment 23 I also remember the Hot Fuel Examination Facility, and how really hot the cells were inside. Your contamination cleanup should address this contamination, as well as all other fission or activation products onsite.

Response OU 9-04 Comprehensive RI/FS investigated the 37 inactive waste sites at ANL-W, two inactive waste sites from WAG 10 near ANL-W, and active ANL-W facilities The active facilities, such as the Hot Fuel Examination Facility, are currently operating under stringent operating procedures and permits. When the operating facilities are eventually shut-down they will be defueled and decontaminated and left in a radiologically and industrially safe condition. At that time residual risks to human health and/or the environment will be evaluated under the CERCLA process with appropriate remedies undertaken as necessary.

Comment 24 This plan's general approach of covering existing waste with a couple feet of dirt and rock and leaving it there is unacceptable.

Response If an engineered cover were implemented it would be designed to prevent the infiltration of water and exposure to humans and ecological receptors. However, the preferred alternative for remediation of the eight areas that pose unacceptable risks to human health and the environment is phytoremediation. The applicability of phytoremediation to remove the contaminants from the soil is currently being evaluated using bench-scale

greenhouse tests. If phytoremediation does not work satisfactorily, a contingent alternative of off-site containment and disposal in a soils repository has been selected.

Comment 25 I feel your program should address and plan to truly cleanup the big problems at the site, as well as the little ones. My fear is that if you do not, no one ever will.

Response The goal of the CERCLA activities at WAG 9 is to eliminate unacceptable risks to human health and the environment. OU 9-04 Comprehensive RI/FS investigated the 37 inactive waste sites at ANL-W, two inactive waste sites from WAG 10 near ANL-W, and also addressed active ANL-W facilities. The active facilities are currently operating under stringent operating procedures and permits. When the operating facilities are shut-down they will be defueled and decontaminated and left in a radiologically and industrially safe condition.

Comment 26 I commend the agencies for selecting an innovative and relatively inexpensive approach to remediate a facility that is environmentally clean compared to other facilities in the INEEL and especially compared to other facilities in the DOE-complex.

Response The agencies acknowledge the commentor's statement that the preferred Alternative 5, phytoremediation is the best and most cost effective alternative option.

Comment 27 Analyses seem conservative and thorough. I favor Alternative 3, considering cost and expeditious improvement over the present state.

Response Although Alternative 3, capping in-place would offer expeditious implementation, it's costs are considerably higher than other alternatives that treat the soils. Thus, the preferred Alternative is 5 and the contingent Alternative is 4a.

Comment 28 Phytoremediation may be scientifically interesting with some long range potential. So pursue that on the parallel path - a small scale development and proof-tests.

Response ANL-W has started bench-scale greenhouse tests to determine the applicability on ANL-W soils. If the bench-scale greenhouse test results are a success a two-year field season will be implemented with verification samples collected to determine how well it is working in the field. If phytoremediation is unsuccessful at either the bench-scale tests or two-year field season, the contingent Alternative 4a would be implemented. The costs associated with parallel implementation of phytoremediation with other alternatives would be prohibitive.

Comment 29 Let's not delay progress on known methods of improvement for years permitting proof of new ideas.

Response The extra costs of using the excavation and disposal over the phytoremediation alternative is not warranted by the benefits gained. Institutional controls practices that

are currently in-place are preventing exposures to current occupational workers at ANL-W. Phytoremediation has proven successful at other DOE contaminated sites for remediating radionuclide and metal contaminated soils. However, ANL-W, with it's specific set of contaminants and location in a semi-arid climate; coupled with the agencies desire to use native plants as much as possible, mandates that the evaluation process be conducted for however long it takes to grow, harvest, and analyze the plants to determine contaminant uptake factors, both in the greenhouse study and at ANL-W. The results of the sampling show that after nearly 40 years of operation, the contaminants are relatively shallow (0-2 feet) and the continued facility continued operation will not leach the contaminants to deeper depths. Thus, there appears to be no determent in allowing phytoremediation to be implemented over the expected time frame.

Comment 30 To say that phytoremediation is "site specific" is probably an understatement qualifying its practicality for general use?

Response Phytoremediation is very contaminant and site specific. That is why the Agencies have selected a contingent alternative if phytoremediation does not work satisfactorily during the bench-scale tests and the two-year field season.

Comment 31 I would hasten to add "more power to new/better ideas - innovation etc"; let's just prove them out before large scale application where sure results are needed.

Response ANL-W has started bench-scale greenhouse tests to determine the applicability on ANL-W soils. If the bench-scale greenhouse test results are a success a two-year field season will be implemented with verification samples collected to determine how well it is working in the field. If phytoremediation is unsuccessful at either the bench-scale tests or two-year field season the contingent Alternative 4a (consolidation at a soils repository) will be selected.

Comment 32 I feel the damage is done! We keep moving this contaminated material around.

Response The OU 9-04 Comprehensive RI/FS determined that only eight areas pose unacceptable risks to human health and the environment. Phytoremediation has been selected by the Agencies as the preferred alternative to remediate these areas. Phytoremediation extracts the contaminants from the soil, thus eliminating the need to move the contaminated soil around. The plants used in phytoremediation will be incinerated (volume reduction) and the ash solidified prior to shipment to an approved landfill.

Comment 33 We just keep piling the contaminated soil on the INEEL so it can filtrate through the soils to the groundwater or be released to the atmosphere.

Response The preferred Alternative 5, phytoremediation, will use plants to uptake contaminants into the plant tissues. This will eliminate the chance that they can filtrate in the soil or be spread to the atmosphere.

Comment 34 The Coalition 21 wishes to commend the DOE and the ANL for considering the phytoremediation technology. The Coalition concurs, contingent on the success of on-going and future studies of this technology, that this should be the preferred method.

Response The Agencies acknowledge the commentor's statement that the preferred Alternative 5, phytoremediation, is the best and most cost effective alternative option.

Comment 35 Care should be taken that if non-native plants are used in the proposed phytoremediation, that such exotic species be absolutely prevented from escaping into the Idaho environment.

Response If non-native plants to the INEEL are selected for phytoremediation, DOE will take every precaution to prevent their propagation. These precautions will, at a minimum include harvesting the plants prior to flowering, and may also include spraying a herbicide to form a sterile zone around the sites to be remediated, and harvesting the whole plant (above and below ground).

Comment 36 Also, the methods for disposing of the ash residues that contains the materials removed from the ANL-West site per this Waste Plan should be specified and evaluated to ensure that the methods meet all applicable criteria.

Response The ash residue after incineration will meet the acceptance criteria of an appropriate radioactive waste disposal facility, or a RCRA permitted hazardous waste disposal facility. The actual method for preparation of the ash for disposal will depend on the standard operating procedures for the operation of the incinerator used.

Comment 37 My comment is that I noticed that there was no mention of a soil type or series in your report.

Response That is correct, the Proposed Plan did not mention the soil type or series. The Proposed Plan is only a short 28 page summary of the 2,600 page OU 9-04 Comprehensive RI/FS. Section 2.5 of the OU 9-04 Comprehensive RI/FS discusses the soils type and series.

Comment 38 Being a BLM Soil Scientist, I maybe able to assist you in identifying the national soil series located adjacent to your Argon clean up site. If your soil is what I think may be there, The Natural Resource Conservation Service and I have a complete characterization lab analysis of this soil on the INEEL.

Response The Agencies would appreciate any help in confirming the specific soil series of the sites where phytoremediation would be implemented. Figure 2-4 of the OU 9-04 Comprehensive RI/FS shows the general soils types near ANL-W. This figure shows that WAG 9 is located in a transition zone between two soil types (432-Malm-Bondfarm-Matheson complex, and 425-Bondfarm-Rock outcrop-Grassy Butte complex).

Comment 39 Gale Olson, Randy Lee with Lockheed and I have published soil information on the site in: "The Status of Soil Mapping for the Idaho National Engineering Laboratory," Jan. 1995 through the Lockheed Company. (INEL-95/0051) Soil series at Argonne are believed to be different than those found in the Bonneville and Jefferson County USDA soils survey reports.

Response DOE used the Gale Olson, Randy Lee document to complete Section 2.5 Soils type for the OU 9-04 Comprehensive RI/FS. Figure 2-4 was taken from this report.

Comment 40 The INEEL CAB recommends selection of Alternative 5, phytoremediation, as the preferred alternative for achieving remedial objectives at ANL-W. As described in the Proposed Plan, Phytoremediation is an innovative technology that utilizes plants to uptake toxic metals and radionuclides through roots *in situ*. Plants that have been used successfully in the past include grasses, shrubs, and/or trees. Following uptake the plant vegetation would be harvested, sampled, and incinerated for volume reduction. The resultant ash would be sampled and sent to a permitted disposal facility. Alternative 5 was ranked best in 6 out of the 7 evaluation criteria, and the cost is significantly lower than the other alternatives. We will be pleased if the technology proves successful. We will support continued endeavors to pursue innovative technologies that could enhance INEEL's role as an environmental laboratory and that could be marketed for use at other contaminated sites

Response The agencies acknowledge the INEEL Citizens Advisory Board's support for Alternative 5, phytoremediation, as the best and most cost effective alternative option for WAG 9 contaminated sites.

Comment 41 We are concerned about the potential for spread of any non-native INEEL species that may be used in the remediation. We recommend that the Record of Decision (ROD) provide more detailed explanations of the species to be used and how DOE proposes to control their potential spread.

Response If non-native plants to the INEEL are selected for phytoremediation, DOE will take every precaution to prevent their propagation. These precautions will, at a minimum include harvesting the plants before flowering, and may also include spraying a herbicide to form a sterile zone around the sites to be remediated, and harvesting the whole plant (above and below ground). The ROD includes selection of the alternatives. The actual selection of the plants would follow successful completion of the bench-scale greenhouse testing. This documentation of the selected plant species as well as planting and harvesting practices will be documented in the Remedial Design Work Plan.

Comment 42 In addition, we are concerned that contaminants taken up into vegetation could be consumed by animals using the remediation area for habitat and feeding. We recommend the ROD address this concern and provide an explanation of steps that will be taken to limit ecological risks to wildlife populations.

Response Some of the plants being investigated in the bench-scale greenhouse test are weedy plants that animals and insects do not eat. The actual selection of the plants would follow successful completion of the bench-scale greenhouse testing. A thorough description of the selected plant species, as well as planting, harvesting, and animal fencing practices will be documented in the Remedial Design Work Plan.

Comment 43 We are finally concerned about dioxins resulting from incineration. We recommend that the combustion of secondary wastes should be addressed in the ROD.

Response Recently, more information has become available on the production of dioxins through incomplete burning of wet and damp vegetation and wood in the presence of high chloride/chlorine concentrations. The plants that DOE is proposing to use have low levels of chloride/chlorine and they will also be completely dried prior to bailing and submittal to the incinerator. Standard Operating Procedures used at the incinerator will prevent incomplete oxidation during the incineration of the plant matter. The off-site rule requires the use of a RCRA subtitle C incinerator or testing of the off-gas. Secondary waste from the burning of dried phytoremediation plant matter would not be of concern since plant matter will have to meet the operating incinerator acceptance criteria. Meeting the incinerator's acceptance criteria will ensure that emissions remain under limits described in the incinerator's air quality permit.

Comment 44 With regard to the contingency identified in the preferred alternative (i.e. Alternative 4A, which would include excavation and disposal on-site at the Soils Repository proposed for Waste Area Group 3 - Idaho Chemical Processing Plant), we have some concern regarding the identification of a facility that may or may not be constructed. We understand that the Radioactive Waste Management Complex (RWMC) may be licensed at some time to receive wastes generated through implementation of cleanup activities in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act. If so, the ROD should explicitly name the RWMC as a back-up to Alternative 4 and document that it would perform similarly to the Soils Repository according to the evaluation criteria.

We understand that the costs associated with the use of RWMC would be comparable to the Soils Repository. The ROD should provide more complete disclosure of the costs associated with the contingency and its backup to support comparisons between them.

Response The language in the Proposed Plan was intended to describe the use of either the Proposed INEEL Soils Repository or the RWMC as a contingent remedial alternative. These two possible locations are identified as Alternative 4a (excavation and disposal on the INEEL) in the OU 9-04 Comprehensive RI/FS. The final selection would be completed in the Remedial Design phase of the CERCLA process, because of the unknowns associated with the proposed INEEL Soils Repository. Costs for both the RWMC and proposed INEEL Soils Repository will be included in the ROD.

Comment 45 Finally, we urge the rapid determination of the feasibility of phytoremediation so that it or the contingency plan can be implemented expeditiously. We request that DOE report the results of the bench scale tests to the INEEL CAB once available.

Response DOE will release the results of the phytoremediation bench-scale tests in August/September 1998, to the CAB as well as other INEEL WAG managers as soon as they are available.

Comment 46 Agree that alternative 5 is best/cost effective option.

Response The Agencies acknowledge the commentor's statement that the preferred alternative is the best and most cost effective alternative option.

Comment 47 DOE's continued use of Envirocare in Utah is unacceptable because it is not a permitted and licenced RCRA/NRC Subtitle C hazardous/radioactive dump. Envirocare is currently being sued by the Natural Resources Defense Council for RCRA non-compliance.

Response The use of Alternative 4b, excavation and disposal off-INEEL was not retained as the preferred or the contingent alternative for the WAG 9 soils that require remediation. Therefore, no WAG 9 CERCLA wastes would be sent to the Envirocare facility for disposal.

Comment 48 The remediation time is lengthy. At least five growing seasons will be required for the remediation to be implemented. This obviously prolongs the risk to human health and the environment for at least four years longer than Alternative 4, Excavation and Disposal, which is the next preferred option and could easily be accomplished commercially in one construction season.

Response Although Alternative 4, would offer expeditious implementation, it's costs are considerably higher than Alternative 5 and no benefits would be gained because current institutional controls at ANL-W limit the occupational worker exposures to acceptable levels. The only risk to humans is from the exposure of cesium-137. These sites are outside the work area of ANL-W that is enclosed with a security fence. Well over 95% of the workers at ANL-W work exclusively within the security fenced area. If work is ever performed in these areas, institutional controls will be implemented to reduce the worker exposure to the levels that pose acceptable risks.

In addition, under CERCLA, permanent solutions and alternative treatment technologies or resource recovery technologies, to the maximum extent practicable, are given preference. Alternative 5 offers cost effective treatment while Alternative 4 does not. Thus, Alternative 5 has been selected for use at WAG 9.

Comment 49 If phytoremediation does not work after the five growing seasons, an alternative remedy will have to be implemented, costing additional time and money and extending the safety

and health risks. Additionally, Alternate 4b could be implemented for the same approximate cost and completed in a much shorter time .

Response Phytoremediation will undergo two series of tests with stringent go, no-go, criteria prior to full utilization at WAG 9. The first is a bench-scale greenhouse test conducted on ANL-W soils and based on these results the second full scale two-year field test will be implemented or the contingent alternative will be selected. At the end of the two-year field test, samples will be collected of the soil and the plants to determine if Alternative 5 is still practicable for use or if the contingent alternative should be implemented. The long-term benefits gained by being able to remove the contaminants from the soils justify the costs of conducting the bench-scale greenhouse test and the two-year field season. Institutional controls are in-place to reduce the occupational worker exposures to acceptable levels during the implementation of the phytoremediation tests.

Comment 50 Phytoremediation is a complicated, multi-step process including five separate planting and harvesting campaigns, incineration of each harvest and consequent disposal of all ash generated from plant burns. In comparison, excavation and disposal is a quick and proven technology that will insure that all remediation goals are met.

Response The long-term benefits gained by being able to remove the contaminants from the soils justify the costs of conducting the bench-scale greenhouse test and the two-year field season. These sites are outside the work area of ANL-W that is enclosed with a security fence. Well over 95% of the workers at ANL-W work exclusively within the security fenced area. Thus, institutional controls are in-place to reduce the occupational worker exposures to acceptable levels during the implementation of the phytoremediation tests.

Comment 51 Although fugitive dust and toxic substances may be reduced while plant life is growing in the contaminated area, five harvesting cycles create five invasive situations where dust will present contamination problems and expose workers, rather than a one time remediation.

Response The risk driver to humans is through the direct exposure pathway of the radionuclides. Engineering controls such as the use of Personnel Protection Equipment, dust suppression, fencing, and commercially available farm equipment with climate controlled cabs can be utilized to reduce the workers exposure.

Comment 52 The government must continue to pay surveillance costs for at least five years until the contaminated area remediation is complete, thus the operations and maintenance costs should be significantly higher than Alternative 4, Excavation and Disposal.

Response DOE is proposing that Alternatives 4 and 5 would each have continued operations and maintenance (O&M) costs that would include continued groundwater, soil and air monitoring in accordance with DOE Orders for the next 20 years. The continued O&M will allow DOE to validate the contaminant modeling results in the RI/FS. Thus, no savings would be realized in O&M costs between Alternatives 4 and 5.

Comment 53 It is important to calculate increases in cost over time since this remediation is spread out over five years and Alternative 4 can be completed in one construction season. The cost of this alternative increases over time, and a realistic comparison must account for this.

Response DOE performed the present value costs for all the retained alternatives for WAG 9. The present value cost for Alternataive 5 was estimated to be less than the present value cost for Alternative 4. The present value costs take into account the inflation costs of work performed in the future as well as the time value of money interest rates. To account for these unknowns, seven years worth of growing seasons were used in preparation of the estimate, evan though it is estimated to take only five years.

Comment 54 The reasoning and facts used to discount Alternative 4b were flawed in some areas. The cost analysis exaggerated commercial excavation and disposal by approximately 240% over disposal costs that are currently available to the DOE and INEEL through existing contracts.

Response DOE used a tipping fee of $350 per cubic yard for disposal of low level radioactive contaminated soil at private facility. The tipping fee was based on costs presented by Envirocare during a soil remediation seminar in Idaho Falls in the fall of 1996. These tipping fee costs along with the $10 per cubic yard rail transport costs make this alternative much more expensive for large sites than either Alternative 4a or 5.

Comment 55 The reasoning and facts used to discount Alternative 4b were flawed in some areas. Operations and maintenance costs are listed at $535,000. Why is there a cost for this since remediation could be completed in one construction season?

Response See response to comment 52.

Comment 56 The fervor with which the preferred alternative was presented at the Idaho Falls public meeting seemed to transcend the enthusiasm for environmental remediation customarily displayed by the Department of Energy and the State of Idaho.

Response DOE, EPA, and the State support phytoremediation for use at WAG 9 because this remedy is the least invasive to the existing ecosystem, has a high probability of success, and is the least costly. In addition, this alternative meets the CERCLA preference for treatment of contaminated soils.

Comment 57 Phytoremediation is being pursued under a Cooperative Research and Development Agreement between Argonne and Applied Natural Sciences. How much federal money has and will be invested in this CRADA? What other federal resources is Applied Natural Sciences using for this project? How will any eventual profits from Treemediation be distributed?

Response This information that you are referring to came from literature of past studies of phytoremediation. DOE is pursuing phytoremediation through it's ANL-W contractor who is working with the ANL-E phytoremediation experts. All costs of the project are going to pay for labor and operations for ANL employees. ANL is a non-profit organization and is only interested in improving the technology and helping others implement it at other facilities.

Comment 58 Is research on phytoremediation going forward in the private sector unaided by the federal government? Is Argonne making use of that research?

Response Private sector use of phytoremediation is growing rapidly with major cleanup activities at non-government facilities. The private research information is being shared between companies on the applicability and success of phytoremediation. However, each of the private companies have patent pending processes and specialized plants that they are using that they will not share with others outside the company.

Comment 59 It is unclear how often harvest will occur. Will the plants be dug up only once (at the end of five growing seasons), after every growing season, after the 1999 field season (to obtain sample results)?

Response The answer to this question will be determined after the bench-scale greenhouse testing is complete. If a small annual grass plant is selected the plants would be harvested after each growing season. Likewise if a perennial plant is selected, the harvesting will occur after two year growing season.

Comment 60 Are the tests planned for the end of the 1999 field season of the contaminated soil or of the plants?

Response Successful bench-scale greenhouse tests have to be completed prior to the two-year long field season. If the bench-scale greenhouse testing is successful, both plant and soil samples will be collected after the two-year long field season and used to validate the applicability of the phytoremediation process at WAG 9. The contaminant analysis of the plants will determine percent uptake of the contaminats on a dry weight basis. These uptake rates will be used along with the density of the plants and the mass of the plant matter to determine the length of time needed to achieve the RAOs. If phytoremediation is unsuccessful at either the bench-scale greenhouse test or the two-year field season, the contingent alternative will be selected.

Comment 61 Phytoremediation seems to necessitate handling the same contaminant several times: during harvest, during sampling, during incineration, during further sampling, entrained on filters, in transport to disposal, during disposal. Are the public and worker health, environmental, and economic costs of each of those steps included in the analysis under review?

Response One of the CERCLA criteria used to evaluate the alternatives is short-term effectiveness. Short-term effectiveness addresses any adverse impacts on human health and the environment that may be posed during the implementation period and period of time needed to achieve the cleanup goals. Institutional controls will be used to reduce worker exposure during activities associated with phytoremediation including; planting, harvesting, shipping, sampling, incineration, characterization, and disposal.

Comment 62 Has Argonne undertaken a mass balance analysis yet? Even an attempt at a theoretical mass balance analysis (curies in soil vs curies disposed) would be useful.

Response DOE has performed a rough mass balance of total curies of cesium-137 in the soil and the total curies of cesium-137 that would have to be removed to meet the remediation goals for WAG 9. A total of 0.295 curies of cesium-137 is in the sites that pose unacceptable human health risks and DOE would have to remove 0.06 curies to meet the established 23.3 pCi/g cleanup goal. This is approximately 20 percent removal of the cesium-137.

Comment 63 When the plants are dug up, airborne releases of contaminants might occur. When asked about that possibility at the Boise public meeting, presenters seemed to indicate that the workers doing the digging would be protected by radiation suits. In Idaho Falls, however, there was reference instead to holding down the dust with a garden hose. The contrast between those two responses seems to indicate a lack of planning and, perhaps, a lack of respect for public concerns.

Response DOE apologizes for the inconsistencies between the meetings. The risk driver to humans is through the direct exposure pathway of the radionuclides. Engineering controls such as the use of Personnel Protection Equipment, dust suppression, fencing, and commercially available farm equipment with climate controlled cabs can be utilized to reduce the workers exposure. Final design of the correct engineering controls will be defined in the Remedial Design phase after completion of the ROD.

Comment 64 The low grade, ongoing problems at Envirocare, a commercial nuclear dump in Utah, emphasize that shipping contamination from here to there may not effect any particular environmental benefit.

Response DOE agrees that no benefit is gained by hauling the soil from WAG 9 and placing it under a cap at an off-INEEL landfill. Ultimately the soil contamination still exists and potential harm to the existing ecosystem from excavation could be significant.

Comment 65 Has INEEL investigated all possible offsite disposal options and their relative risks and benefits? Is that analysis available to the public?

Response DOE has evaluated two off-site disposal options as part of the 24 possible remedial process options evaluated in the WAG 9 RI/FS. These process options were screened using effectiveness, cost, and implementability and used to develop the WAG 9 remedial

alternatives. The five WAG 9 remedial alternatives were then evaluated using the nine CERCLA evaluation criterion. The possible offsite disposal option that was retained for WAG 9 is Alternative 4b. In this alternative DOE used the Envirocare facility in Utah to develop the cost estimates. The final selection of an offsite facility would take place in the Remedial Design phase. However, Alternative 4b is not the preferred or the contingent alternative for WAG 9.

A complete review of this process can be found in Chapters 7, 8, 9, and 10 of the WAG 9 Comprehensive RI/FS.

Comment 66 When was the management and operating contract for Argonne National Laboratory last put out for competitive bid?

Response To date, the management and operating contract for Argonne National Laboratory has never been put out on a competitive bid.